
A PRELIMINARY HEURISTIC MODEL OF AGGRESSIVE BEHAVIOUR IN DRIVERS

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Introduction

Aggressive driving actions, expressions of road rage, and the threat of assault between drivers are widely seen as major, and probably growing problems on the roads of North America. Concerns with aggressive driving are not entirely new, however. Maynard Parry published a book in the UK in the mid-1960s, titled *Aggression on the Road* (Parry, 1964), which reflected many of the same concerns as are seen today. Current concerns are not only due to the unacceptable nature of the incidents, but also to the perception that these incidents may be increasing in frequency and/or severity.

In 1996, the AAA Foundation for Traffic Safety sponsored a study of police and news reports of aggressive incidents between January 1990 and September 1996. The researchers found over 10,000 extreme aggressive incidents reported during this period. At least 218 people were killed and 12,610 injured in these incidents. The injuries include scores of cases in which people suffered paralysis, brain damage, amputation, and other seriously disabling injuries. The number of incidents reported each year increased substantially over the six years studied (Mizell, 1996).

Defining Aggressive Driving

There does not yet appear to be consensus as to what behaviours should be included in the definition of aggressive driving. Mizell's database study defined aggressive driving as an incident in which an angry motorist or passenger *intentionally* injured or killed another motorist, passenger, or pedestrian, or attempted to do so in response to a traffic dispute, altercation, or grievance. Also included were incidents of motorists intentionally driving into buildings or other structures. Other researchers also see the *intent to cause harm* as an important defining issue (Monash University, 1997).

Concern about aggressive driving in the US led to Congressional hearings in 1997. The Subcommittee Chairman succinctly identified the definitional confusion prevalent in this field as follows,

There is no one standard definition for aggressive driving. Some academic researchers define aggressive driving as an incident in which an angry or impatient motorist or passenger intentionally injures...The public tends to view aggressive driving as any type of risk-taking behavior behind the wheel, including speeding, tailgating, weaving dangerously through traffic, and ignoring signs or red lights (Shuster, 1997).

The broader definition of aggressive driving as any unusual risky driving, is also used in the traffic enforcement community as a vehicle for public relations and a target for selective and automated enforcement efforts. For example, some police jurisdictions use automated camera techniques to detect and prove cases of aggressive driving, in the broader sense (Retting, 1999).

Based on his review of the research literature, Barry Elliot, an Australian safety researcher attempted to establish a definition of “road rage.” He suggested a somewhat narrowed range of aggressive driving behaviours as those focused on damaging, threatening, or deliberately annoying another driver. These behaviours were:

Beeping the horn	Pursuing a vehicle
Flashing head lights	Forcing a car off the road
Gesticulation	Forcing a car to pull over
Verbal abuse	Bumping into another car
Tailgating	Threatening another driver
Braking or slowing suddenly	Damaging a vehicle intentionally
Deliberate obstruction	Physically assaulting a driver
Cutting off or swerving in front	

Prevalence, Perception, and the Media

Elliot found that some of the behaviours that have been defined as road rage are so common as to be almost normal. He concluded,

If by ‘road rage’ we mean all of the activities listed earlier, then it is endemic. There is ample evidence that actions defined as ‘road rage’ occur every day on our road networks. All the surveys in the UK,

USA, and Australia indicate that a majority of motorists will experience one or more of the...behaviours over a normal year or two. However, if we define 'road rage' as assault then it is a rare phenomenon (Elliot, 1999).

Elliot defined assault as physical contact, as opposed to threat, perhaps reflecting differences in the legal definition of assault in general among different jurisdictions. In Canada and the US, some forms of threat, even without actual contact, may be considered assault.

As better data become available, it is likely that the relative prevalence of the different aggressive driving behaviours will be found to be inversely proportional to their severity. For instance, there is obviously much more tailgating and angry gesturing than assault or homicide on our roads. Driving 20-30% faster than the posted speed limit bears little resemblance, and perhaps little relation to, say, use of firearms with lethal intent on the roads.

Road safety research has, so far, been weak in observing and categorizing normal, everyday driving behaviour. Smart road and vehicle technology may help us overcome this deficiency. As research establishes a behavioural baseline and ongoing data accumulates, we will be better able to judge whether there are upward trends in all sort of driver behaviours, aggressive and otherwise. At the present time, it seems to be unknown whether the severe incidents, or any of these behaviours, are actually increasing, or if only media attention and perceptions have changed.

There are, of course, many reasons to speculate *why* aggressive behaviour might be increasing, if it is. More aggression could be seen as resulting from reactions to all sorts of social, cultural, and economic factors; everything from increased traffic congestion to violence in the media. One potential factor worth exploring is changes in traffic enforcement.

At least in some Canadian jurisdictions, there appear to have been substantial reductions in traffic enforcement presence in recent years (Lonerio, 1999). As an example, Figure 1 below reflects convictions registered in the Canadian province of Ontario in each year between 1985 and 1997 (the last year available). The graph shows: 1) total convictions, including federal crimes, such as DWI; 2) total provincial Highway Traffic Act convictions; and HTA speeding convictions. Between the late 1980s and mid-1990s convictions declined by nearly half. There

were more speeding convictions in 1988 than convictions of all types in 1995. Estimated travel and other indicators of driving activity rose during this period, despite a massive economic recession.

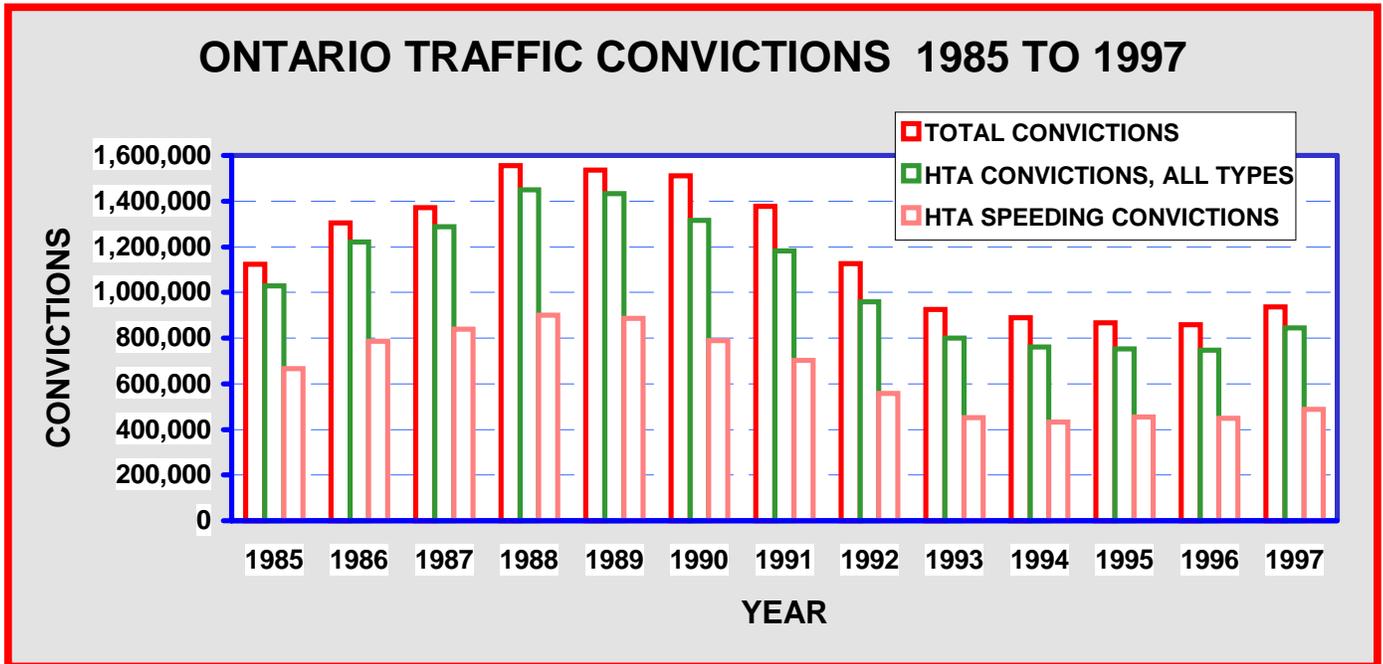


Figure 1. Ontario Registered Convictions - 1985-1997

Assuming that there has not been a drastic *improvement* in driver behaviour, the reduction in convictions might be a reason to think that enforcement presence was reduced. Also assuming that enforcement presence has an inhibiting effect on aggressive driving, then we would not be surprised to see an increase in aggressive driving. It is not yet clear if this pattern in enforcement/convictions is typical among North American jurisdictions, but police budgets were constrained in most of them.

Popular media have found the apparent growth of the more extreme or bizarre aggressive driving incidents to make 'good copy'. The subject seems pervasive in the media, and this may be feeding the idea that the actual situation on the roads is deteriorating rapidly. US news magazines have featured cover stories about road rage (e.g., Vest, Cohen and Tharp, 1997). A recent Canadian Broadcasting Corporation story on freeway driving was introduced with a wholly unsupported statement that "road rage" was rapidly increasing on Canadian roads. Police forces announce "crackdowns" on aggressive driving. Media interest in road rage seems to

have even evolved into a form of grim humor. For instance, a Canadian national newspaper, *The Globe and Mail* (June 15, 1999) reported a bumper sticker reading:

Honk if you've never seen an Uzi fired from a car window.

However, even some popular media have suggested that the scale of the aggressive driving problem is exaggerated (or at least that it has always been bad and is not getting worse). Writing in *Atlantic Monthly*, Fumento (1998) criticized Mizell's methods and commented on the rapid growth of media attention to road rage during the 1990s. He thinks this may have produced the growing public concern reflected in public-opinion polls. He also warned that preoccupation with the extremes of aggressive driving, if unwarranted by the actual size of the problem, may distract attention and resources from other important parts of road safety.

The research findings on aggressive driving in one country may not apply in another, since there certainly are major differences in driving behaviours and expectations in different cultures. It is important to clarify the nature, shape and scale of aggressive driving and other aggressive actions by drivers, as well as finding practical solutions to reduce the more inappropriate manifestations. Regardless of whether the trend in aggressive driving and road rage incidents is flat or upward, these problems need to be studied and addressed. Even if the problems are steady or cyclical, and not actually increasing in some secular trend, they lead to unacceptable losses.

Solutions

In the search for effective policies and solutions, it is clear that a better perspective on aggressive driving is needed, in terms of theoretical understanding of the problem and of empirical research data. There are a wide range of psychological and other social-science perspectives, from the frustration-aggression hypothesis to attribution theory, which may help illuminate portions of these behaviours.

A more coherent understanding and more fruitful policy discussion depends on a clearer definition of the continuum of aggressive actions of drivers. This is needed before we move on to production of testable hypotheses about prevalence trends, reasons and remedies for specific aggressive behaviours, as well as whatever common factors may tie them together. Empirical research should start with descriptive study of the incidence, antecedents, consequences, and correlates of the defined

behaviours so that effective interventions can be planned, implemented, coordinated, and evaluated (Lonero, Clinton, Wilde, Roach, McKnight, Maclean, Guastello, and Lambie, 1994).

A starting point for a taxonomy of aggressive driving is suggested in Figure 2 below, intended as a rough example of ways in which we may be able to build a clearer model to aid understanding and communication. The three-dimensional model allows us to categorize a wide range of aggressive driving behaviours. A more sophisticated version of such a model can begin to bring order to the current definitional confusion over:

- Aggressive *driving* actions versus *assaults*,
- *Mobility* motives versus road rage *reactions*,
- *Severity* of intent and consequences, and
- Additional dimensions that will emerge from further research.

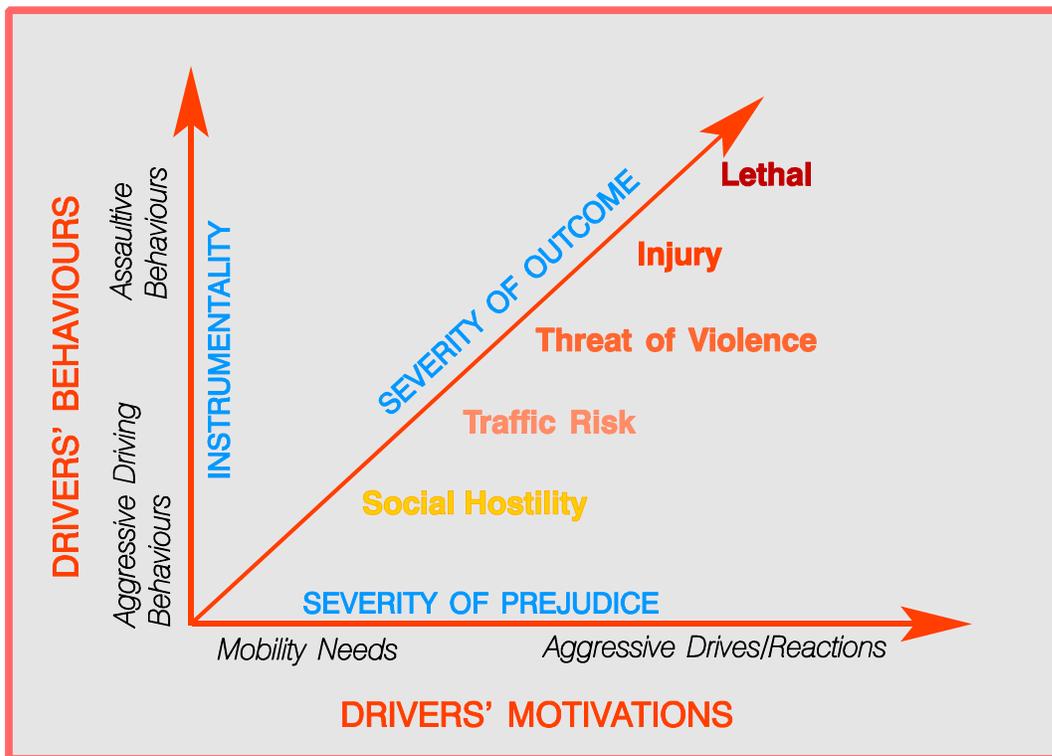


Figure 2. Preliminary Model for Aggressive Driving

A fair amount is now known about causes and treatment of other forms of violent, reactive aggression (e.g., Canadian Panel on Violence Against Women, 1993; Harway and O'Neil, 1999), and this broader knowledge must to be brought to bear on the study and treatment of the extremes of aggressive driving. Some methods and supporting materials have been developed specifically for treating road ragers, and these can possibly help support more widely-focused anti-violence services in addressing problems specific to aggressive drivers (e.g., AAA Foundation for Traffic Safety, 1997; Larson, 1996).

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